In the Claims

1. (currently amended) A multiple-input multiple-output (MIMO) wireless communications system comprising:

(i) ~~an~~ a dual polarised antenna array comprising a plurality of transmit antenna elements;

(ii) a beamformer for coherently combining elements of a same polarisation to ~~and~~ forming a first ~~plurality of~~ directional ~~antenna~~ beam[[s]] having a first polarisation and a second directional beam having a second polarisation; and

(iii) ~~(ii)~~ a plurality of receive antenna elements;

wherein the first and second beams provide two independent MIMO channels ~~plurality of antenna beams provide polarisation diversity and wherein the transmit antenna elements are arranged such that spatial diversity is avoided~~.

2. (original) A MIMO wireless communications system as claimed in claim 1 wherein each of said transmit antenna elements is polarised at one of two first substantially orthogonal polarisations.

3. (original) A MIMO wireless communications system as claimed in claim 2 wherein each of said receive antenna elements is polarised at one of two second substantially orthogonal polarisations.

4. (original) A MIMO wireless communications system as claimed in claim 3 wherein said two first substantially orthogonal polarisations are different from said two second substantially orthogonal polarisations.

5. (original) A MIMO wireless communications system as claimed in claim 1 wherein said plurality of transmit antenna elements comprises one or more dual-polar-elements each such dual-polar-element being two co-located antenna elements operable from a single antenna aperture.

6. (Cancelled)

7. (original) A MIMO wireless communications system as claimed in claim 1 which is arranged to perate at a particular wavel ngth and wh rein the inter-

element spacing of the transmit antenna elements is less than one of the particular wavelength.

8. (currently amended) A MIMO wireless communications system as claimed in claim 1 which is arranged to provide both non-MIMO communications and ~~in addition to~~ MIMO communications substantially simultaneously.

9. (Cancelled)

10. (currently amended) A MIMO wireless communications system as claimed in claim [[9]] 1, comprising ~~wherein said plurality of antenna beams are provided using~~ one or more beamformers integral with the transmit antenna elements.

11. (currently amended) A MIMO wireless communications system as claimed in claim [[9]] 1 wherein said beamformer forms a plurality of ~~antenna beams comprises~~ pairs of antenna beams, each pair comprising a first antenna beam of a first polarisation and a second antenna beam, substantially identical to the first but provided at a second polarisation different from the first polarisation.

12. (original) A MIMO wireless communications system as claimed in claim 11 wherein each of said pairs of antenna beams is arranged to provide a two-branch MIMO input.

13. (original) A MIMO wireless communications system as claimed in claim 1 which is selected from a 2:2 and a 2:4 MIMO system.

14. (original) A MIMO wireless communications system as claimed in claim 1 which is selected from a fixed wireless access system, a personal area network, a wireless local area network, and a mobile communications network.

15. (original) A MIMO wireless communications system as claimed in claim 1 wherein each of said transmit antenna elements comprises a column of antenna elements.

16. (currently amended) A multiple-input multiple-output wireless communications method comprising the steps of:-

(I) forming a first ~~plurality of antenna~~ directional beam[[s]] having a first polarisation and a second directional beam having a second polarisation from a transmit dual polarised antenna array comprising a plurality of antenna elements by coherently combining elements of a same ~~arranged such that~~ polarisation ~~diversity is provided and spatial diversity is avoided~~;

(II) transmitting a space-time coded signal from said transmit antenna array, wherein said first and second beams provide two independent MIMO channels; and

(III) receiving the space-time coded signal at a receive antenna arrangement comprising a plurality of receive antenna elements.

17. (previously presented) A method as claimed in claim 16 which further comprises:

(i) positioning the transmit antenna array and the receive antenna arrangement such that a line of sight path is present between those two arrangements; and

(ii) using said transmit antenna array to transmit the space-time coded signal to the receive antenna arrangement at least partly along said line of sight path.

18. (previously presented) A method as claimed in claim 16 which further comprises transmitting a non-space-time coded signal from the transmit antenna array simultaneously with the space-time coded signal.

19. (currently amended) An antenna arrangement for use in a multiple-input multiple-output (MIMO) wireless communications system, said antenna arrangement comprising

a[[n]] dual polarised antenna array comprising a plurality of transmit antenna elements and

a beamformer for coherently combining elements of a same polarisation to form[[ing]] a ~~plurality of antenna~~ first directional beam[[s]] having a first polarisation and a second directional beam having a second polarisation, wh rein th first and sec nd ~~plurality of~~ beams provide ~~polarisation diversity and~~

~~wherein the transmit antenna elements are such that spatial diversity is avoided~~ two independent MIMO channels.

20. (previously presented) An antenna arrangement as claimed in claim 19 which is arranged to operate at a particular wavelength and wherein the transmit antenna elements have an inter-element spacing which is less than one of the particular wavelength.

21. (original) An antenna arrangement as claimed in claim 19 which is also suitable for use in a non-MIMO communications system simultaneously with use in the MIMO communications system.

22. (original) A method of operating an antenna arrangement as claimed in claim 19 which comprises transmitting space-time coded signals from said antenna arrangement.

23. (original) A method of operating an antenna arrangement as claimed in claim 19 which further comprises a plurality of receive antenna elements and wherein said method comprises receiving space-time coded signals at said antenna arrangement, said signals being polarisation diverse and having a substantially insignificant amount of spatial diversity.